

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings of claims in the application:

LISTING OF CLAIMS:

1.-12. (CANCELLED)

13.(NEW) Method for preparing a membrane to be assembled in a membrane electrode assembly, comprising the step of swelling an ion-conducting membrane in a liquid containing at least one solvent or to an atmosphere containing the vapor phase of at least one solvent by controlling the content of the solvent in the ion conducting membrane.

14.(NEW) Method according to claim 13, characterized in that the ion conducting membrane is a radiation grafted membrane.

15.(NEW) Method according to claim 14, characterized in that the graft level is in the range of 5 to 50 mol%, preferably 10 to 40 mol%.

16.(NEW) Method according to claim 14, characterized in that the grafting solution comprises a crosslinker monomer; the content of said crosslinker monomer is in the range of 5 to 25%, preferably less than 20%, relative to styrene.

17.(NEW) Method according to claim 13, characterized in that prior to the swelling step,

a) the ion conducting membrane is treated in a strong acid solution for a period in the range of 10 minutes to 120 minutes; and

b) rinsing the so-treated ion conducting membrane, preferably until the rinse water is neutral.

18.(NEW) Method according to claim 13, characterized in that the ion conducting membrane is coated, preferably impregnated, with a ionically conducting polymeric phase.

19.(NEW) Method according to claim 15, characterized in that the grafting solution comprises a crosslinker monomer; the content of said crosslinker monomer is in the range of 5 to 25%, preferably less than 20%, relative to styrene.

20.(NEW) Method according to claim 14, characterized in that prior to the swelling step,

a) the ion conducting membrane is treated in a strong acid solution for a period in the range of 10 minutes to 120 minutes; and

b) rinsing the so-treated ion conducting membrane, preferably until the rinse water is neutral.

21.(NEW) Method for manufacturing a membrane electrode assembly using a ion conducting membrane, i.e. a ion conducting membrane prepared according to any of the preceding claims, comprising the steps of:

a) providing a ion conducting membrane in a pre-swollen state;

b) coating of the ion conducting membrane on both sides with an electrode layer to form a sandwich; and

c) hot-pressing the sandwich to form an ion conducting bonding of the afore-mentioned layers of the sandwich.

22.(NEW) Method according to claim 21, characterized in that a catalytic active layer is disposed between the electrode layer

and the ion conducting membrane on both sides of the ion conducting membrane.

23.(NEW) Method according to claim 21, characterized in that as electrode layer one of the group consisting of a carbon cloth, carbon paper and a carbon felt is used, preferably applied in form of a hydrophilic liquid, such as a polar and hydrogen-bonding solvent.

24.(NEW) Method according to claim 21, characterized in that the hot-pressing condition are selected from at least one of the following conditions:

- a) temperature in the range of 70 to 150 C, preferably in the range of 90 to 120 C ;
- b) pressure in the range of 2 to 30 MPa, preferably 5 to 18 MPa; and
- c) duration time of hot-pressing treatment in the range of 15 to 400 seconds, preferably 60 to 240 seconds.

25.(NEW) Method according to claim 21, characterized in that the catalytic active layer comprises at least one selected from the group containing platinum, ruthenium, rhodium, rhenium, nickel, rare earth and transition metals and compounds thereof.

26.(NEW) A membrane electrode assembly, manufactured according to claim 21, comprising a hot pressed sandwich comprising an electrode layer, a ion conducting membrane and again an electrode layer, thereby using the ion conducting membrane in its pre-swollen status prior to the hot-pressing.

27.(NEW) A membrane electrode assembly according to claim 26, characterized in that the depth of the ion conducting membrane is in the range of 5 to 250µm, preferably 20 to 200µm.

28.(NEW) Method according to claim 22, characterized in that as electrode layer one of the group consisting of a carbon cloth, carbon paper and a carbon felt is used, preferably applied in form of a hydrophilic liquid, such as a polar and hydrogen-bonding solvent.